Statement of Basis

 Permit to Construct No. P-2015.0003
 Project ID 61937

 Lignetics of Idaho, Inc.
 Kootenai, Idaho

 Facility ID 017-00029

 Final

 March 8, 2018
 Shawnee Chen, P.E.
 Senior Air Quality Engineer

 The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq. Rules for the Control of Air Pollution in Idaho, for issuing air permits.
ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC  acceptable ambient concentrations
AACC acceptable ambient concentrations for carcinogens
acfm  actual cubic feet per minute
ASTM American Society for Testing and Materials
BDT  bone dry ton
Btu  British thermal units
CAA  Clean Air Act
CAM  Compliance Assurance Monitoring
CEMS continuous emission monitoring systems
cfm  cubic feet per minute
CFR Code of Federal Regulations
CMS  continuous monitoring systems
CO  carbon monoxide
CO₂ carbon dioxide
CO₂e CO₂ equivalent emissions
DEQ Department of Environmental Quality
dscf  dry standard cubic feet
EL  screening emission levels
EPA United States Environmental Protection Agency
GACT Generally Available Control Technology
gr  grains (1 lb = 7,000 grains)
HAP  hazardous air pollutants
IDAPA a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr pounds per hour
lb/qtr pound per quarter
Lignetics Lignetics of Idaho
MACT  Maximum Achievable Control Technology
MMBtu million British thermal units
MMscf  million standard cubic feet
NAAQS National Ambient Air Quality Standard
NESHAP National Emission Standards for Hazardous Air Pollutants
NOV  notice of violation
NO₂  nitrogen dioxide
NOₓ nitrogen oxides
NSPS  New Source Performance Standards
PM  particulate matter
PM₂.₅ particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM₁₀ particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm parts per million
R  Rules for the Control of Air Pollution in Idaho
scf  standard cubic feet
SCL  significant contribution limits
SIP  State Implementation Plan
SO₂  sulfur dioxide
SOₓ sulfur oxides
T/yr  tons per consecutive 12 calendar month period
TAP toxic air pollutants
VOC volatile organic compounds
µg/m³ micrograms per cubic meter
FACILITY INFORMATION

Description
Lignetics of Idaho (Lignetics) is a sawdust and shavings pelletizing plant. The facility processes sawdust and shavings from lumber mills into wood pellets and Presto logs. The sawdust and shavings are dried in a drum dryer heated by wood, natural gas, No. 2 fuel oil, used-oil-derived fuel, or a mixture of No. 2 fuel oil and used-oil-derived fuel. The dried sawdust and shavings are pneumatically conveyed to a hammer mill and pellet mill. A portion of the dried sawdust is conveyed to a material grinder which grinds the sawdust prior to burning in the wood-fired burner.

Permitting History
The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

- **August 5, 1991** DEQ issued the initial PTC for the wood pelletizing plant, Permit status (S)
- **October 9, 1992** DEQ amended the PTC for the wood pelletizing plant, Permit status (S)
- **November 22, 1995** DEQ amended the PTC for the wood pelletizing plant, Permit status (S)
- **October 28, 1996** DEQ amended the PTC for the wood pelletizing plant, Permit status (S)
- **April 18, 2003** P-000126, PTC modification to allow the combustion of a mixture of No. 2 fuel oil and used-oil derived fuel in addition to natural gas in the drum dryer, Permit status (S)
- **November 17, 2006** P-060119, PTC modification to install a new dryer line replacing the existing dryer line and to install a supplemental wood fuel grinder, Permit status (S)
- **November 2, 2015** P-2015.0003 PROJ 61468, PTC revision to include the consent order requirements into the permit, such as drum dryer short-term throughput limit, fuel usage limit, dryer inlet temperature limit, fugitive control. (A, but will become S upon issuance of this permit)

Application Scope
This permit is a revision of the facility's existing permit to construct (PTC). This permit revision does not include any changes to equipment at the facility. The purpose of this permitting action is to improve fugitive emissions control of the truck dump area and to revise the drum dryer throughput limit and its corresponding monitoring and recordkeeping requirements as required in the consenter order case No. E-2016.0019.

Application Chronology
- **November 15, 2016** DEQ issued an NOV to the facility.
- **August 28, 2017** DEQ received an application and an application fee.
- **September 5, 2017** DEQ determined that the application was complete.
- **October 30, 2017** DEQ made available the draft permit and statement of basis for peer and regional office review.
- **November 3, 2017** DEQ made available the draft permit and statement of basis for applicant review.
- **December 27, 2018** DEQ received the permit processing fee.
- **January 9 & February 20, 2018** DEQ received the dryer throughput tracking procedures.
- **March 8, 2018** DEQ issued the final permit and statement of basis.
TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1  EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

<table>
<thead>
<tr>
<th>Source ID No.</th>
<th>Sources</th>
<th>Control Equipment</th>
<th>Emission Point ID No.</th>
</tr>
</thead>
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<td>Wood-furnish Drum Dryer or</td>
<td>High Efficiency Primary Cyclone and Quad Multicone</td>
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<td>Rotary Dryer</td>
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<td>Fines Cyclone Stack</td>
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<td></td>
<td>Pellet Cooler Stack</td>
<td>Cyclone</td>
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Emissions Inventories

This project is a PTC revision to address the issues listed in the consenter order case No. E-2016.0019. Allowable emissions will not change as a result of this permitting action. For a complete emission inventory, refer to the statement of basis for PTC No. P-060119 issued on November 17, 2006. All emission limits in the existing PTC are carried over with no change as a result of this permitting action.

Ambient Air Quality Impact Analyses

Emissions will not increase as a result of this permitting action, thus the ambient air quality impact analysis is not required.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Bonner County, which is designated as attainment or unclassifiable for PM$_{2.5}$, PM$_{10}$, SO$_2$, NO$_2$, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

A  =  Use when any one HAP has actual or potential emissions $\geq$ 10 T/yr or if the aggregate of all HAPs (Total HAPs) has actual or potential emissions $\geq$ 25 T/yr.

SM80  =  Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the permit sets limits $> 8$ T/yr of a single HAP or $\geq$ 20 T/yr of THAP.

SM  =  Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the potential HAP emissions are limited to $< 8$ T/yr of a single HAP and/or $< 20$ T/yr of THAP.

B  =  Use when the potential to emit without permit restrictions is below the 10 and 25 T/yr major source threshold

UNK  =  Class is unknown

For All Other Pollutants:

A  =  Actual or potential emissions of a pollutant are $> 100$ T/yr.
SM80 = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are \geq 80 T/yr.

SM = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are < 80 T/yr.

B = Actual and potential emissions are < 100 T/yr without permit restrictions.

UNK = Class is unknown.

### TABLE 2 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

<table>
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<tr>
<th>Pollutant</th>
<th>Uncontrolled PTE (T/yr)</th>
<th>Permitted PTE (T/yr)</th>
<th>Major Source Thresholds (T/yr)</th>
<th>AIRS/AFS Classification</th>
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<td>&lt;100</td>
<td>100</td>
<td>B</td>
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\(^1\)Taken from the statement of basis for PTC No. P-060119 issued on November 17, 2006.

**Permit to Construct (IDAPA 58.01.01.201)**

IDAPA 58.01.01.201........................................... Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the proposed revision. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

**Tier II Operating Permit (IDAPA 58.01.01.401)**

IDAPA 58.01.01.401........................................... Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400-410 were not applicable to this permitting action.

**Visible Emissions (IDAPA 58.01.01.625)**

IDAPA 58.01.01.625........................................... Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.9 and 2.29.

**Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)**

IDAPA 58.01.01.301........................................... Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM\_{10}, SO\_{2}, NO\_{X}, CO, or VOC, or 10 tons per year for any one HAP or 25 tons per year for all HAPs combined as demonstrated previously in the Emissions Inventories section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006, and the requirements of IDAPA 58.01.01.301 do not apply.
PSD Classification (40 CFR 52.21)

40 CFR 52.21......................................................................................... Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a) and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

The facility is not subject to any NSPS requirements in 40 CFR Part 60.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

GACT/MACT Applicability (40 CFR 63)

The facility is not subject to any GACT/MACT standards in 40 CFR Part 63.

Permit Conditions Review

This section describes those permit conditions that have been added, revised, modified or deleted as a result of this permitting action. New text is in bold.

Permit Conditions 1.1 to 1.3

Permit Condition 1.1 states the purposes of this permitting action. Permit Condition 1.2 states that those permit conditions that have been modified or revised by this permitting action are identified by the permit issue date citation located directly under the permit condition and on the right-hand margin. Permit Condition 1.3 states that this PTC replaces PTC No. P-2015.00030 project 61468, issued on November 2, 2015.

Permit Condition 2.3

"b. Based on 24-hr averaging time period" is added to the footnote for Table 2.2. It clarifies that the lb/hr limits are based on 24-hr averaging time period. The limits are for compliance with the 24-hr PM10 NAAQS.

Revised Permit Condition 2.13

The lb/hr limit was imposed in 2015 permit because the facility could not meet the permitted emission limits during the 9/23/2014 performance test when the wood furnish feed rate was at 20.7 tons per hour or greater.

On April 5, 2017, the facility performed another PM10 performance test. The test result showed that the emissions rate was 51% of the permitted limit at the 83% of the permitted throughput rate. The facility has demonstrated compliance with the permit limits. Because the PM10 lb/hr limit is for compliance with the 24-hr PM10 NAAQS and because the averaging time period for the limit is 24-hour not hourly, the applicant has requested to only keep the daily throughput limit in the permit and removed the hourly throughput limit.

The 4/5/2017 source test correlates the dryer's emissions with the dryer's production rate in bone dry ton (BDT). Based on the source test data, the applicant has proposed to monitor the dryer production rate in BDT instead of green ton to demonstrate compliance with the dryer's PM10 emissions limits. The limit of 480 T/day in the existing permit is converted to BDT/day using the following method:

\[
480 \text{ T/day} \times (1 - \text{moisture content in wood furnish in the existing permit, 45%}) = 480 \text{ T/day} \times (1-45\%) = 264 \text{ BDT/day}
\]

The PC 2.13 is revised and read as follows:

"Drum Dryer Production Rate Wood Furnish Processing Limit and Moisture Content Specification"
The production rate of the drum dryer. Wood furnish feed to the drum dryer shall not exceed 20 tons per hour and 480 tons 264 bone dry tons per day (BDT/day) based on feed material moisture content of 0% 45%.”

Permit Condition 2.22

According to the 10/11/2017 email from the facility, the permittee would enclose the truck dump area and would have it completed by November 1, 2017.

“**The permittee shall enclose the truck dump area.**” is added to PC 2.22. This permit condition is to address the violation in the consent order for fugitive dust control.

Revised Permit Condition 2.23

“Within 60 days after startup” is removed. The permittee should have already developed the O&M manual.

Revised Permit Condition 2.25

To be consistent with General Provision 3.10, “two-year” has been changed to “five-year” in PC 2.25.

Revised Permit Condition 2.27.1

Due to the change of PC 2.13 on dryer’s throughput limit, the monitoring needs to be changed accordingly. The DEQ’s approved Dryer Throughput Tracking procedures are included in Appendix A of the SOB. PC 2.27.1 is revised and reads as follows:

“**2.27.1 The permittee shall demonstrate compliance with Drum Dryer Production Rate Limit and Moisture Content Specification Permit Condition using the DEQ approved Dryer Throughput Tracking procedures that are included in the statement of basis for this permit. Changes to the procedures are required to be approved by DEQ.**

The procedures shall include, but not limited to, the following:

- Monitor and record the following tracking information daily:
  - Daily mass of packaged pellet production in tons,
  - Daily log production in tons,
  - The change in mass of pellets in the pellet bin daily in tons,
  - Record the daily average moisture content of green furnish and of finished product, respectively, and
  - Calculate the mass of fuel required to dry furnish from the daily average green furnish moisture content to the daily average finished product moisture content in tons.
- Provide the method, including the calculation, on how the daily drum dryer throughput is determined.
- Calculate daily drum dryer throughput in BDT/day.”

Permit Condition 2.30

Typographical errors in PC 2.30 are corrected.

Revised Permit Condition 2.38

On April 5, 2017, the facility performed a PM₁₀ performance test. The test result showed that the emissions rate was 51% of the permitted limit at the 8% of the permitted throughput rate. Therefore, the next required performance test will be by April 5, 2022. “June 16, 2019” in PC 2.38 is replaced with “April 5, 2022”.

Because of the changes to the dryer throughput monitoring in PCs 2.13 and 2.27.1, PC 2.38 is revised and reads as follows:

- “The production rate of wet furnish feed to the drum dryer shall be monitored and recorded according to the DEQ approved test protocol during each performance test run.
- The furnish feed moisture content of the material dried by the drum dryer shall be monitored and recorded at least once during each performance test run.”
In addition, based on the comments from DEQ's source test staff, the following is added to the PC 2.38:

“All performance testing shall be conducted in accordance with the requirements of IDAPA 58.01.01.157.02(a) which states:

*The test must be conducted under operational conditions specified in the applicable state or federal regulation, rule, permit, order, consent decree or by Department approval. If the operational requirements are not specified, the source should test at worst-case normal operating conditions. Worst-case normal conditions are those conditions of fuel type, and moisture, process material makeup and moisture and process procedures which are changeable or which could reasonably be expected to be encountered during the operation of the facility and which would result in the highest pollutant emissions from the facility.*”

Revised Permit Conditions 2.39 and 2.40

Because the complexity of how the production rate of the dryer in BDT will be determined, the permittee is required to obtain a DEQ approved source test protocol prior to conducting a compliance test required by this permit. The protocol shall include how the production rate in BDT of the drum dryer will be determined during source test and what will be included in the source test report.

General Provisions

General Provisions are updated using the current PTC template.

PUBLIC REVIEW

Public Comment Opportunity

Because this permitting action does not authorize an increase in emissions, an opportunity for public comment period was not required or provided in accordance with IDAPA 58.01.01.209.04.
APPENDIX A – DEQ APPROVED DRYER THROUGHPUT TRACKING PROCEDURES

A.1 The Dryer Throughput Tracking Spreadsheet (2018AAG457)
A.2 The January 9, 2018 letter (2018AAG456)
A.3 The February 20, 2018 letter (2018AAG455)
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**Notes:**
1. Increase in bulk pellets (ton/day) = total pellets (ton) - previous day bulks (ton) + increase in bulk pellets (ton/day).
2. Total pellets produced (ton/day) = (ton/day) + (ton/day). produced (ton/day) + (ton/day). produced (ton/day).
3. Total wood removed (ton/day) = total pellets added (ton/day) - wood removed (ton/day) - (ton/day).
4. Total wood fuel required to remove water (ton/day) = total wood fuel required to remove water (ton/day).
5. Total wood removed (ton/day) = total pellets added (ton/day) - wood removed (ton/day) - (ton/day).
6. Total dryer throughput (ton/day) = total pellets added (ton/day) - wood removed (ton/day) - (ton/day).

**References:**
1. Pellet production based on less than 10,000 lbs of heaviest pellets, with each bag weighing 40 pounds. Bag weights are verified hourly.
2. Based on the bulk pellets for inventory level.
3. The daily average moisture content is based on moisture content analysis from a grab sample taken from the dryer after each increment of at least one hour.
4. The daily average moisture content is based on moisture content analysis from grab samples taken from the dryer after each increment of at least one hour.
5. The adjusted entropy of steam flow for each dryer is calculated from the finished pellet production and dryer thermal efficiency.
6. The adjusted entropy of steam flow for each dryer is calculated from the finished pellet production and dryer thermal efficiency.
7. The adjusted entropy of steam flow for each dryer is calculated from the finished pellet production and dryer thermal efficiency.
8. The adjusted entropy of steam flow for each dryer is calculated from the finished pellet production and dryer thermal efficiency.
January 9, 2018

Steve Bacon
Idaho Department of Environmental Quality
Compliance and Enforcement, Air Quality Division
1410 North Hilton
Boise, Idaho 83706

Re: Proposed Dryer Throughput Tracking, Lignetics of Idaho, Inc., Facility ID No. 017-00029

Dear Mr. Bacon:

On October 2, 2017, Lignetics, Inc. received a draft of the proposed Consent Order for their facility located in Sandpoint, Idaho. The proposed Consent Order was drafted by the Idaho Department of Environmental Quality (DEQ) to resolve the November 10, 2016 Notice of Violation (NOV). Lignetics requested that Maul Foster & Alongi (MFA) and Stoel Rives, LLP review the conditions in the proposed Consent Order and develop comments, which were submitted to DEQ electronically on October 31, 2017.

As part of the comments submitted on the draft Consent Order, Lignetics proposed an in-person meeting with DEQ to review the dryer throughput tracking methodology. This meeting was held on December 19, 2017. Eric Laurance of Lignetics and Brian Eagle of MFA traveled to Boise to meet with Steve Bacon, Mike Simon, and Darrin Pampaian of the DEQ in person. Almer Castle and Shawn Sweetapple also attended the meeting via phone from the DEQ regional office in Coeur d'Alene.

After walking through the proposed dryer throughput tracking methodology, DEQ requested that Lignetics submit a writeup outlining the methodology, and include the Excel spreadsheet-based calculations for review and approval. The following memo outlines the dryer throughput tracking methodology implemented in the Excel spreadsheet, and identifies specific variables that will be tracked by Lignetics. The dryer throughput tracking methodology will be used by Lignetics to demonstrate compliance with the daily throughput limit of 264 bone dry tons (BDT) per day.

Dryer Throughput Tracking

All of the wood furnish processed through the dryer is used for pellet production, for log production, or as fuel in the wood-fired burner used to supply heat to the dryer. Dried furnish is transferred to the Main Cyclone, where it is separated from the dryer combustion air. From the Main Cyclone, the furnish is transferred to a hammer mill for sizing. The sized furnish is then deposited into Bin #7, which distributes the furnish to three pellet mills, two log machines, and the burner fuel bin.
The proposed dryer throughput tracking methodology calculates total dryer throughput as the sum of:

a) Total production of pellets and logs (BDT/day)

b) Fuel used to dry the pellet and log green furnish (BDT/day)

c) Fuel required to dry the fuel in b) above (BDT/day)

Production of finished pellets and logs are closely tracked for accounting purposes. This, in addition to the consistent finished moisture content, make production a reliable foundation for calculating total dryer throughput. The sum of total pellet production (both packaged and stored) and total log production represents the majority of the dryer throughput. This production (in tons at 6.5% moisture) is corrected to bone dry tons using the following formula:

\[
\text{Production (BDT/day)} = \frac{\text{production (tons/day)}}{\left(1 - \frac{\text{moisture content} \%}{100}\right)}
\]

The balance of the dryer throughput (total throughput minus pellet and log production) is used as fuel for the burner (i.e. a slippstream of the dryer throughput is directed back to the burner). Because it is not feasible to directly measure the amount of fuel redirected to the burner, the amount of furnish used as wood fuel in the burner is calculated based on the mass of water removed from the green furnish used to produce the pellets and logs. The mass of the green furnish dried for use in the pellets and logs is calculated using the following formula:

\[
\text{Green throughput (tons/day)} = \frac{\text{dry throughput [BDT/day]}}{\left(1 - \frac{\text{green moisture content} \%}{100}\right)}
\]

The mass of water removed from the furnish used to produce pellets and logs is calculated by subtracting the total pellet and log production (at the finished product moisture content) from the mass of green furnish dried for use in the pellets and logs. The energy required to remove this water is calculated using the enthalpy of steam (1,100 Btu/lb water), adjusted to account for the additional energy needed to remove hygroscopic moisture (it is increasingly energy intensive to remove moisture below approximately 20%) and waste heat loss through the drying process. The calculated energy is then converted to an equivalent mass of wood using the heat content of the finished products (Btu per pound of wood). The resulting mass of wood is on the same moisture basis as the finished products. This mass is then converted to bone dry tons from the finished moisture content.

The final calculation is for the furnish throughput referred to as “the fuel to dry the fuel” (in BDT/day), which is calculated by applying the fuel to production ratio to the total wood fuel required to remove water from the pellet and log furnish (in BDT/day).

Each calculation used to derive the total dryer throughput is presented in the attached Excel workbook. Variables used in the calculations are further explained in the following sections.

In discussing the proposed dryer throughput tracking methodology, it is important to recognize that the most recent source test demonstrated that Lignetics has emissions well below the hourly PM$_{10}$ limit when operating within 90% of the throughput limit. It is also important to recognize that the
Dryer inlet temperature limit imposed on the facility as a result of the 2014 source test serves to limit both the rate at which furnish can be effectively dried, and the rate at which fuel can be consumed.

**Variable 1. Average Green Furnish Moisture Content**

Lignetics proposes to record the daily average moisture content of the green furnish being fed to the dryer. The moisture content of the incoming green furnish is measured from grab-samples taken at least once every two hours from the infeed conveyor. The moisture contents are averaged over a given day, and this average moisture content is recorded in the Excel spreadsheet for each day.

**Variable 2. Pellet Production**

Lignetics proposes to track the daily finished pellet production, in units of finished tons per day. Furnish is extruded into pellets by the pellet mills, and the extruded pellets are conveyed to the bulk pellet bins. Extruding also produces some sawdust which is sent to the fuel bin. Pellets are conveyed from the bulk pellet bin to the packaging system where they are packaged into 40 pound bags. The production of packaged pellets is tracked, and the mass per bag of pellets is verified every hour. The daily mass of pellets produced is equal to the sum of pellets packaged, and the change in the level of pellets in the bulk pellet bins. The level of the bulk pellet bins is recorded once daily to correlate with the amount of pellets packaged over a 24-hour period. If pellet production outpaces pellet packaging, the level of pellets in the bulk pellet bin will increase, and vice versa. The change in bulk pellet bin levels (either positive or negative) is added to the amount of pellets packaged. Lignetics will record the production of packaged pellets and the level of the bulk pellet bins each day of operation.

**Variable 3. Log Production**

Lignetics proposes to track the daily finished log production, in units of finished pallets per day. Logs are produced from furnish by two log machines. The daily throughput of finished log production is tracked, and the log weights are verified every two hours. Logs are packaged on pallets. Lignetics produces both full and half pallets for distribution. A full pallet weighs 0.975 tons. Lignetics proposes to record the number of each type of pallet produced each day of operation.

**Variable 4. Finished Product Moisture Content**

Lignetics proposes to use a moisture content of 6.5% to represent the final moisture content of the pellets and logs. Lignetics sets a target final moisture content of approximately 6.5% for the finished pellets and logs, which is integral to the quality of the finished product. The pellets are regularly sent for audit testing to verify the physical pellet parameters (moisture content, heat value, fines content, etc.) as part of the Lignetics product labeling requirements. However, because there is potential variability from sample to sample, and because each sample sent for testing represents a small fraction of the overall production, Lignetics is not proposing to use the tested final moisture contents as part of the throughput tracking calculations. Lignetics will instead maintain records of
the pellet testing results for review by DEQ, if requested, to demonstrate that the facility is effectively achieving their target final moisture content of 6.5%.

Variable 5: Enthalpy of Steam

Lignetics proposes to use 1,815 Btu per pound water as the enthalpy of steam for calculating the energy required to remove moisture from the green furnish. This is 1.65 times higher than the enthalpy of steam (1,100 Btu per pound, stated previously) to account for vaporization of hygroscopic water and waste heat loss. Based on experience with other pellet mills, 1,815 Btu per pound water is a reasonably conservative value that is representative of the energy used per pound of water removed in the dryer system used at the Lignetics facility in Sandpoint.

Variable 6: Wood Heat Content

Lignetics proposes to use 8,200 Btu/pound as the heat content of the wood fuel to calculate the mass of wood fuel required to dry the pellets and logs. This is representative of the heat content of the fuel pellets produced by the facility. As stated previously, the pellet heat content is tested as part of the regular pellet testing done as part of quality assurance procedures. Because the burner uses the same furnish that is used to produce pellets, the pellet heat content is equivalent to the dryer fuel heat content. Lignetics will maintain records of the pellet testing data for review by DEQ if requested.

Conclusion

Lignetics appreciates the opportunity to propose the dryer throughput tracking methodology outlined in this letter. As has been stated before, a similar methodology is successfully implemented in Lignetics’ two Oregon facility with the approval of the Oregon DEQ. If you have any remaining questions or concerns about the proposed dryer throughput tracking methodology, please contact me at (541) 466-7002, or claurance@bmfp.com.

Sincerely,

Lignetics, Inc.

[Signature]

Eric Laurance
General Manager

Attachments: Dryer Throughput Tracking Calculation Spreadsheet
February 20, 2018

Steve Bacon
Idaho Department of Environmental Quality
Compliance and Enforcement, Air Quality Division
1410 North Hilton
Boise, Idaho 83706

Re: Proposed Dryer Throughput Tracking. Additional Information
Lignetics of Idaho, Inc., Facility ID No. 017-00029

Dear Mr. Bacon:

On January 9, 2018, Lignetics, Inc. submitted a proposed dryer throughput tracking methodology to the Idaho Department of Environmental Quality (DEQ) for review and approval. On February 5th, 2018, Eric Laurance of Lignetics and Brian Eagle of Maul Foster & Alongi participated in a conference call with DEQ to review specific questions related to the proposed dryer throughput tracking methodology. This letter seeks to address the following two items for which DEQ requested additional explanation:

1. Additional context for the proposed enthalpy of steam of 1,815 Btu per pound (Btu/lb) of water removed

2. Development of a plan for regular finished product moisture content measurements

Enthalpy of Steam
As stated in the January 9, 2018 submittal, Lignetics proposes to use 1,815 Btu/lb of water removed as the enthalpy of steam for calculating the energy required to remove moisture from the green furnish. This is 1.65 times higher than the enthalpy of steam (1,100 Btu/lb of water removed) to account for vaporization of hygroscopic water and waste heat loss.

Lignetics was provided with an estimate of the enthalpy of steam for the wood-fired dryer in operation at the Lignetics facility in Cascade Locks, Oregon of 1,726 Btu/lb of water removed. This is 1.57 times higher than the 1,100 Btu/lb referenced previously. As discussed in the conference call on February 5th, 2018, Eric Laurance used his professional experience working with wood-fired rotary dryers to conservatively estimate that the Sandpoint dryer has an enthalpy of steam 1.65 times higher than 1,100 Btu/lb. Eric took into consideration the differences between the Sandpoint and Cascade Locks dryer systems and operating conditions as part of applying his professional judgement to estimate the enthalpy of steam for the Sandpoint dryer.
Finished Product Moisture Content
Lignetics sets a target final moisture content of approximately 6.5% for the finished pellets and logs, which is integral to the quality of the finished products. Because the wood-fired burner is fueled by the furnace dried in the dryer, the increased fuel demand required to achieve moisture contents below 6.5% takes dried material away from potential production. Lignetics works to optimize the production of pellets and logs by minimizing the amount of wood required to fuel the burner.

Lignetics currently relies on a third party analytical laboratory to verify the moisture content of the finished products. However, to provide additional granularity on the finished product moisture content, Lignetics proposes to perform more regular in-house finished product moisture content testing. Lignetics will measure the moisture content of the finished pellets once every two hours, and calculate a daily average finished product moisture content for entry into the recordkeeping system. Data will be entered in a manner similar to the green furnace moisture content.

DEQ requested that Lignetics revise the dryer throughput tracking spreadsheet to incorporate the revised finished product moisture content sampling. A column for the daily finished product moisture content has been added to the revised dryer throughput tracking methodology in the attached Excel workbook.

Conclusion
Thank you for the opportunity to provide additional clarity on the proposed dryer throughput tracking methodology. Please contact me at (541) 466-7002, or elaurance@bmtfp.com if you have any issues receiving the attached Excel spreadsheet.

Sincerely,

Lignetics, Inc.

[Signature]

Eric Laurance
General Manager

Attachments: Dryer Throughput Tracking Calculation Spreadsheet
APPENDIX B – FACILITY DRAFT COMMENTS

The following comments were received from the facility on November 17, 2017:

**Facility Comment:** The proposed changes primarily related to the new truck dump enclosure. The language in the draft permit and statement of basis refer to the “totally enclosed” truck dump. The enclosure has an opening to allow the front end loader access to the enclosure. Netting similar to that surrounding the storage pile has been added to the opening of the enclosure to help improve the efficacy of the enclosure. To prevent confusion on the nature of the enclosure, the word “totally” should be removed from the permitting documents.

**DEQ Response:** The request change is made in Permit Condition 2.22 and in the SOB.

**Facility Comment:** Regarding the requirement to record the dryer throughput every 15 minutes during source testing, this is no longer a feasible option. Lignetics will utilize the new recordkeeping and tracking methodology to determine the amount of material dried during each test run. The 15 minute interval requirement was based on reading the output of the weigh scale conveyor, and is no longer pertinent. Lignetics will submit the proposed recordkeeping methodology with the future source testing protocol.

**DEQ Response:** “at least once every 15 minutes” is changed to “according to the DEQ approved test protocol” in Permit Condition 2.38 and in the SOB.
APPENDIX C – PROCESSING FEE
PTC Processing Fee Calculation Worksheet

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

<table>
<thead>
<tr>
<th>Company:</th>
<th>Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td>City:</td>
<td>State:</td>
</tr>
<tr>
<td>Zip Code:</td>
<td>Facility Contact:</td>
</tr>
<tr>
<td>Title:</td>
<td>AIRS No.:</td>
</tr>
</tbody>
</table>

| N | Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N |
| Y | Did this permit require engineering analysis? Y/N |
| N | Is this a PSD permit Y/N (IDAPA 58.01.01.205.04) |

<table>
<thead>
<tr>
<th>Emissions Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollutant</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
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</tr>
<tr>
<td>SO2</td>
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<tr>
<td>CO</td>
</tr>
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</tr>
<tr>
<td>VOC</td>
</tr>
<tr>
<td>TAPS/HAPS</td>
</tr>
<tr>
<td>Total:</td>
</tr>
</tbody>
</table>

Fee Due: $1,000.00

Comments: